

MBTA

State of the Service:

Green Line Light Rail

May 2, 2016

Key Facts: Green Line



- Over 200,000 trips each weekday—the nation’s busiest light rail line
- 66 stations
- Right of Way
 - 31 track miles (yard + revenue)
 - 82 switches
 - 5 miles of tunnel section
 - 51 traffic signalized intersections
- 204 light rail vehicles
 - Type 7: 110
 - Type 8: 94

Key Issues: Green Line

- Ridership and Capacity
- Safety Investments
- Fleet Condition and Age
- Infrastructure Condition and Age
- Accessibility



Assets Overview: Green Line

18 ventilation shafts

38 ventilation fans

235 miles of power cable;

19 power substations

165 wayside signal equipment cases

26 (revenue) track miles

241k tons ballast,
131,225 rail ties,
and 5.2 miles of tunnel;
82 switches

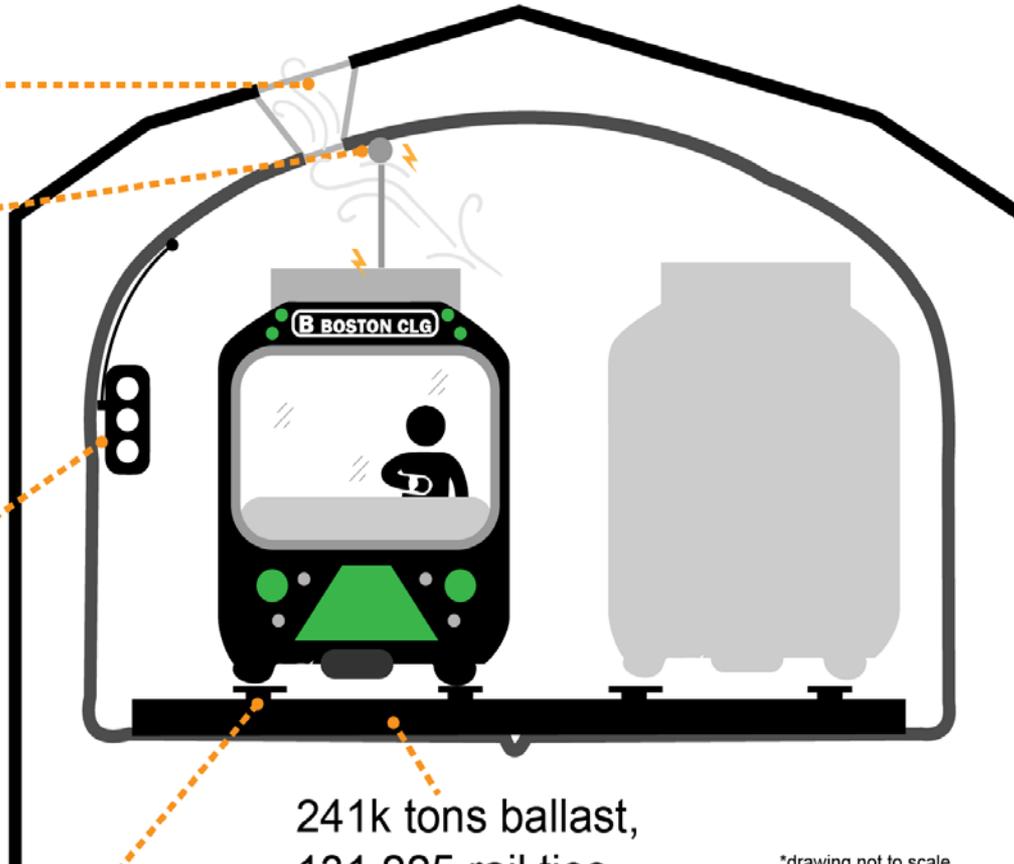
*drawing not to scale

Fleet Facilities

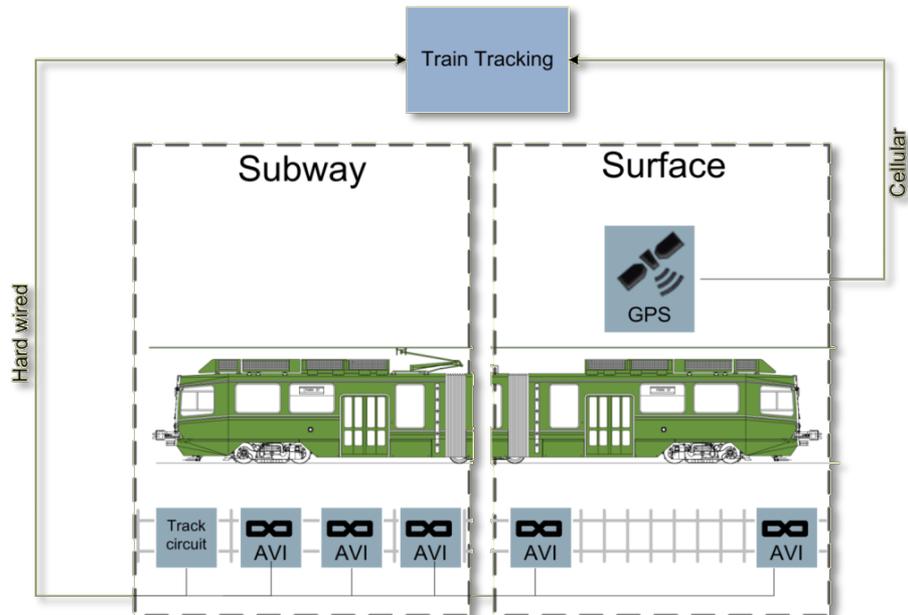
Riverside

Boston College

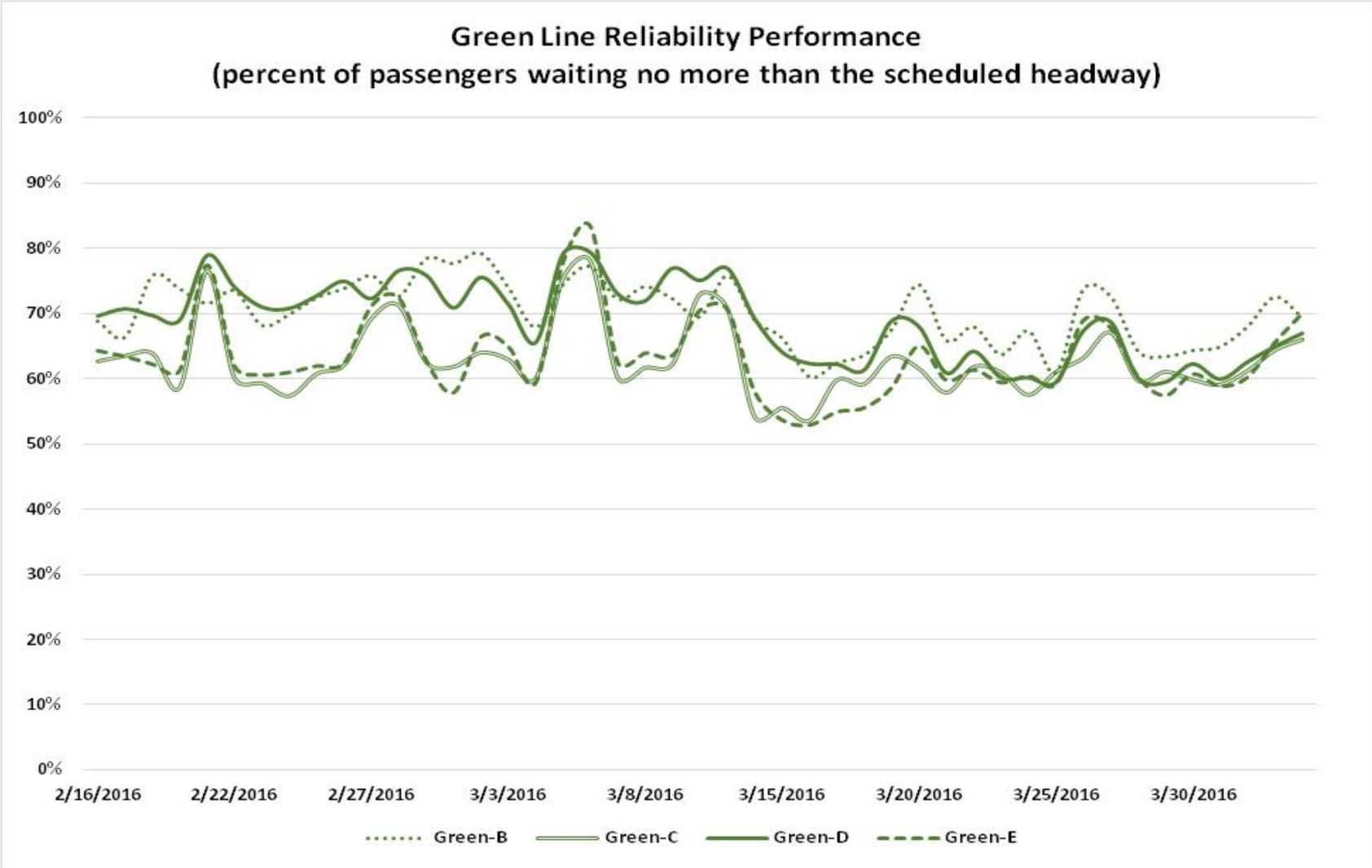
Reservoir



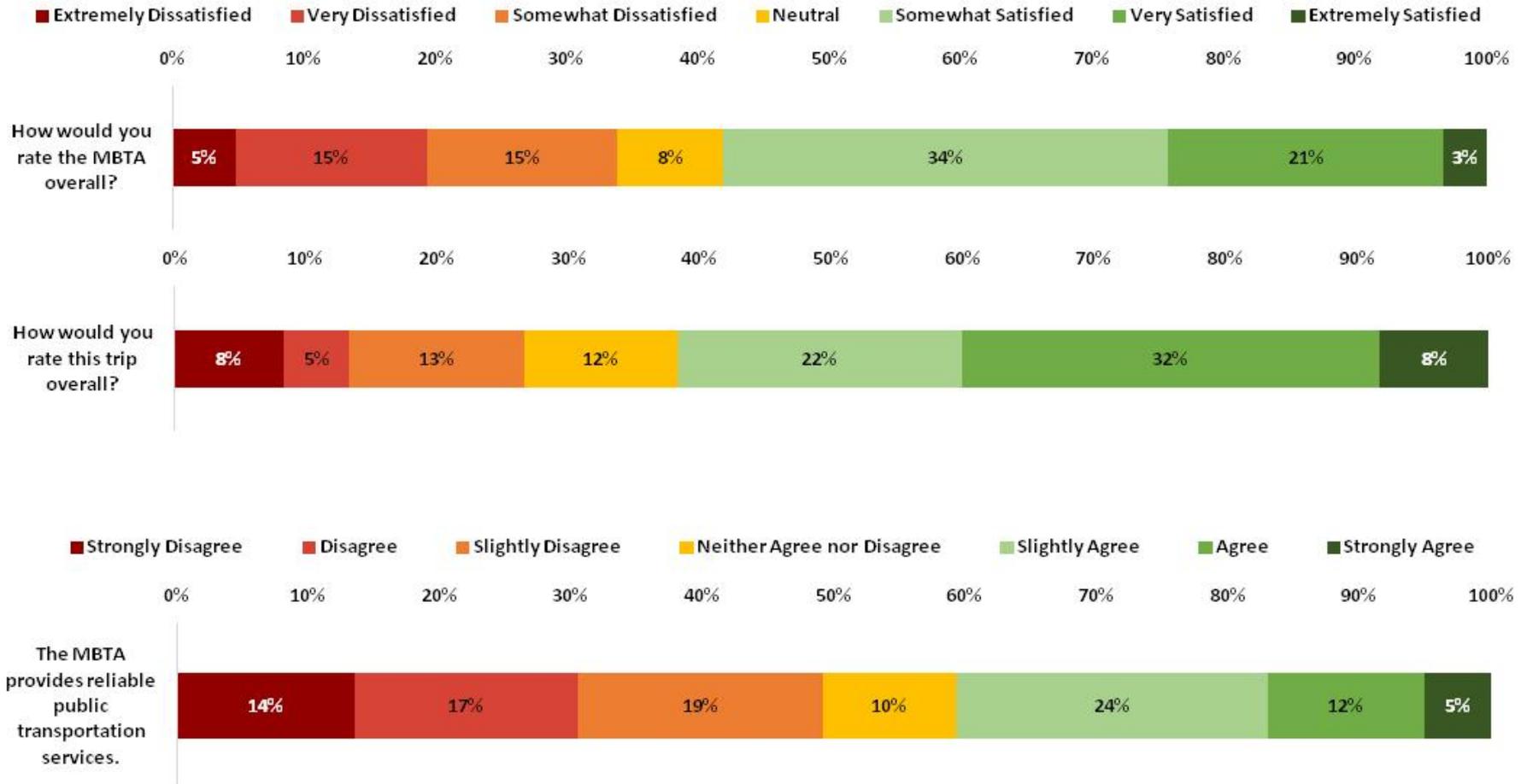
Green Line Tracking: In place January 2016



Performance: Green Line

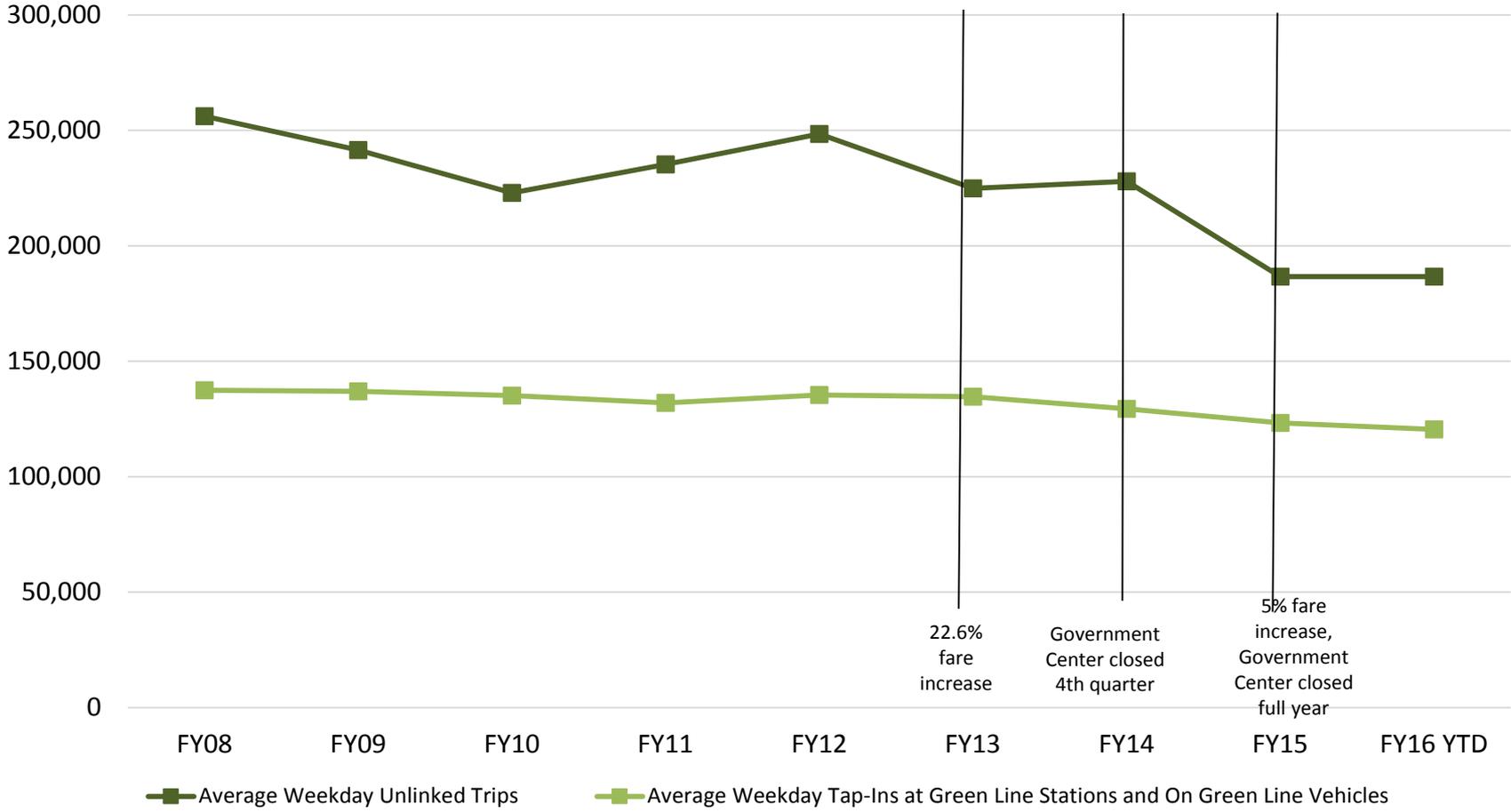
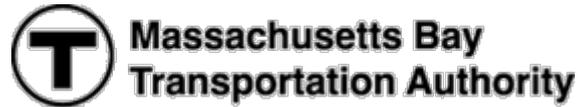


Customer Survey: Green Line



Source: March 2016 Customer Opinion Panel (N=62)

Green Line Average Weekday Unlinked Trips and Average Weekday Tap-Ins



Background

- Major accidents
 - May 2008 – 1 fatality and multiple injuries
 - May 2009 – multiple injuries
- July 2008: NTSB Safety Recommendation
- Feb 2010: DPU Corrective Action Plan
- Dec 2012: Green Line PTC presentation to MassDOT Board

Train Control Systems

- Initial focus was on Positive Train Control
- Evaluation of alternative technologies with a focus on preventing signal violations and train to train collisions
- Discussion with regulatory agencies on next steps
- Presentation on System Safety

Fleet: Green Line

204 Vehicles with 146 Required for Peak Service

Type 7 – High Floor

- 3600 Series, 1986, 90 cars
- 3700 Series, 1997, 20 cars
- MDBF 5,336 vs. goal of 5,500

Type 8 – Low Floor

- 1999-2008, 94 cars
- MDBF 3,808 vs. goal of 5,500

Type 9 – Low Floor, support GLX service

- 2017-18, 24 cars
- \$182.7 m
- Design review and prototyping
- On schedule



Signal

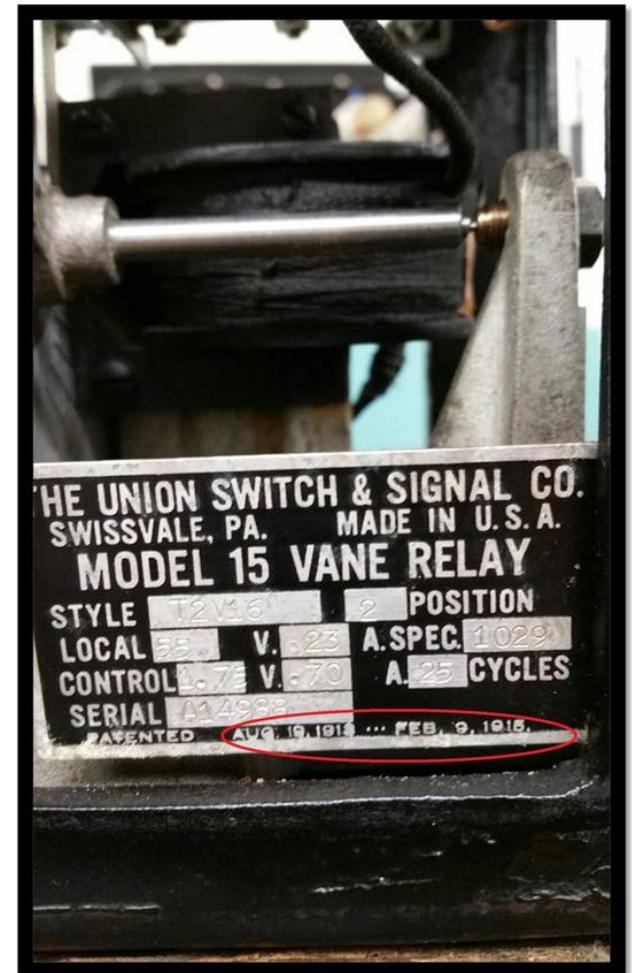
- Portions date to early 1900s
- 25Hz Track Circuit Components Obsolete and Unavailable
- Re-use and Reconditioning of Components is Unsustainable

Track

- Beacon Junction Track Condition
- Cross Drives – B, C and E Lines
- Central Subway Work Constraints

Power

- Traction Power Substation Age
- Negative Return Replacements



Accessibility: Green Line Stations

Accomplishments

- 32 of 66 stops are accessible
- 31 street-level stops are inaccessible
- Government Center Opened March 2016
- Hynes Station in project development
- BU West, St. Paul, Babcock, Pleasant St. under design and will be consolidated into two new accessible stations
- Challenges include need for lane shifting and coordination with Cities/Towns
- PATI will consider future opportunities for surface station consolidation



Accessibility: Green Line Vehicles

- 94 fully-accessible Type 8 cars in service
- 102 Type 7 cars in service
 - Require use of mobile lift to board
- Policy requires a Type 8 to be part of consist when possible
- Long-term: Provide level boarding—raise platforms to meet car floor of new vehicles

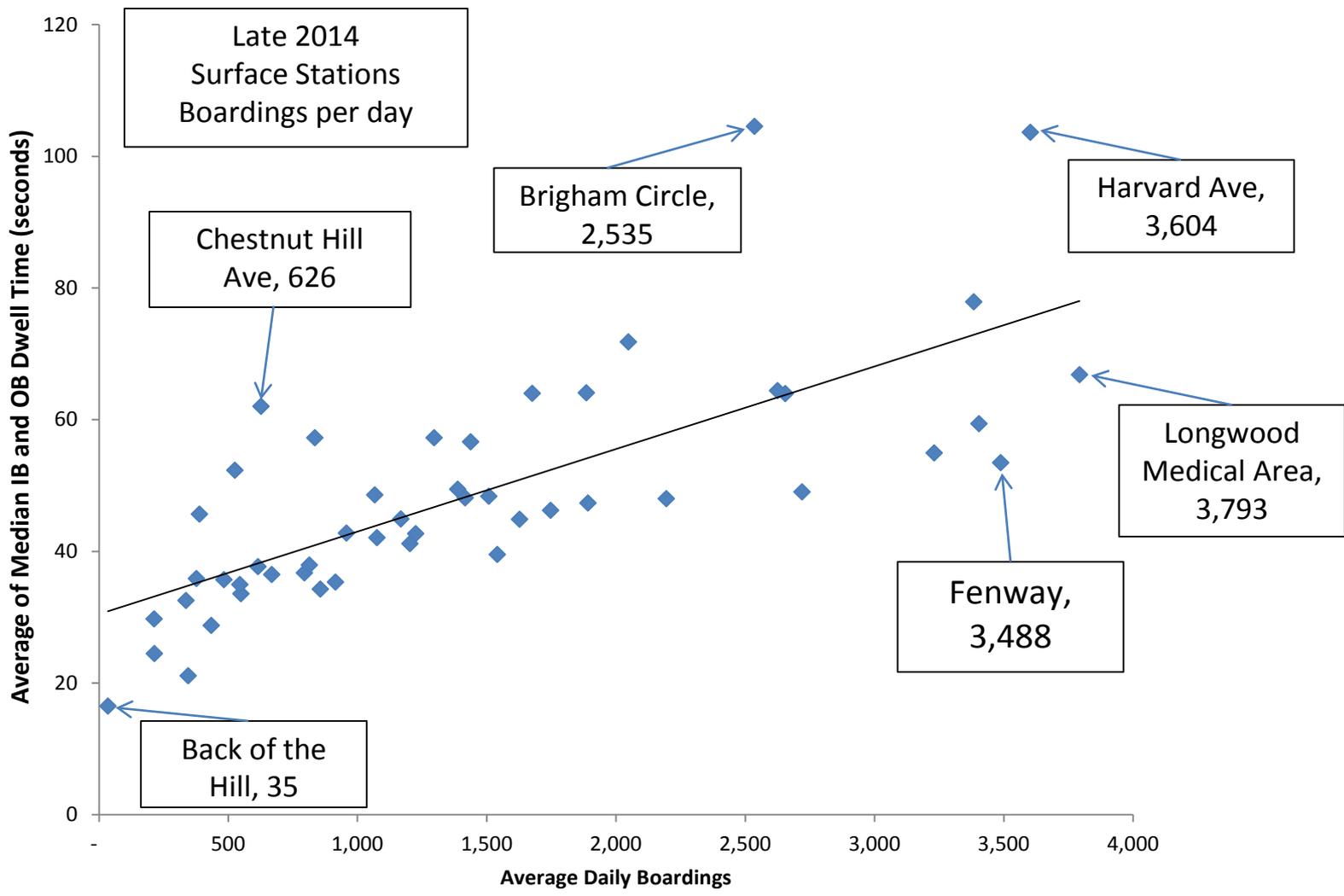


Critical Management Focus:

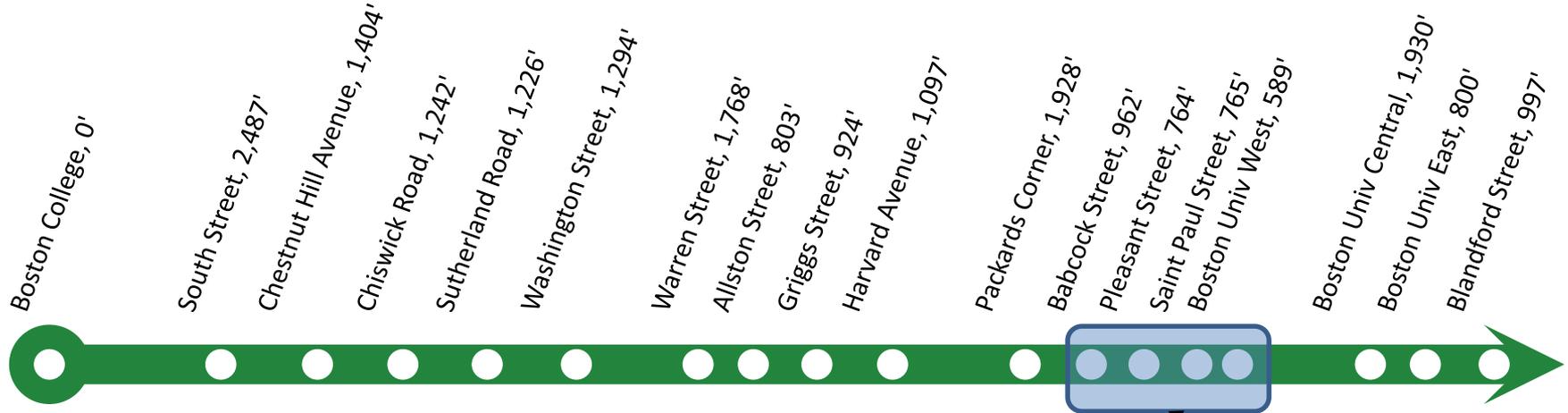
- Fare Collection and Fare Evasions
- Crowding and Dwell Times
- Stop Spacing on Surface Lines
- Transit Signal Prioritization
- Capacity



Dwell time: Green Line



Stop Spacing – B Line Surface



Preferred Station Spacing: 1,200' – 1,400'. B Line Average = 1,234'

Stop Pairs Below the Preferred Spacing on Surface B Line	Distance
Saint Paul Street → Boston University West	589
Babcock Street → Pleasant Street	764
Pleasant Street → Saint Paul Street	765
Boston University Central → Boston University East	800
Warren Street → Allston Street	803
Allston Street → Griggs Street	924
Packards Corner → Babcock Street	962
Boston Univ East → Blandford Street	997
Griggs Street → Harvard Avenue	1,097

Stop
Consolidation
Planned

Commonwealth Avenue



Final Design Late 2016/Construction 2017-18

Transit Signal Prioritization

Improve Reliability on Surface Segments

- Allow trains to request extra time to clear the intersection
- Utilizes new GPS tracking

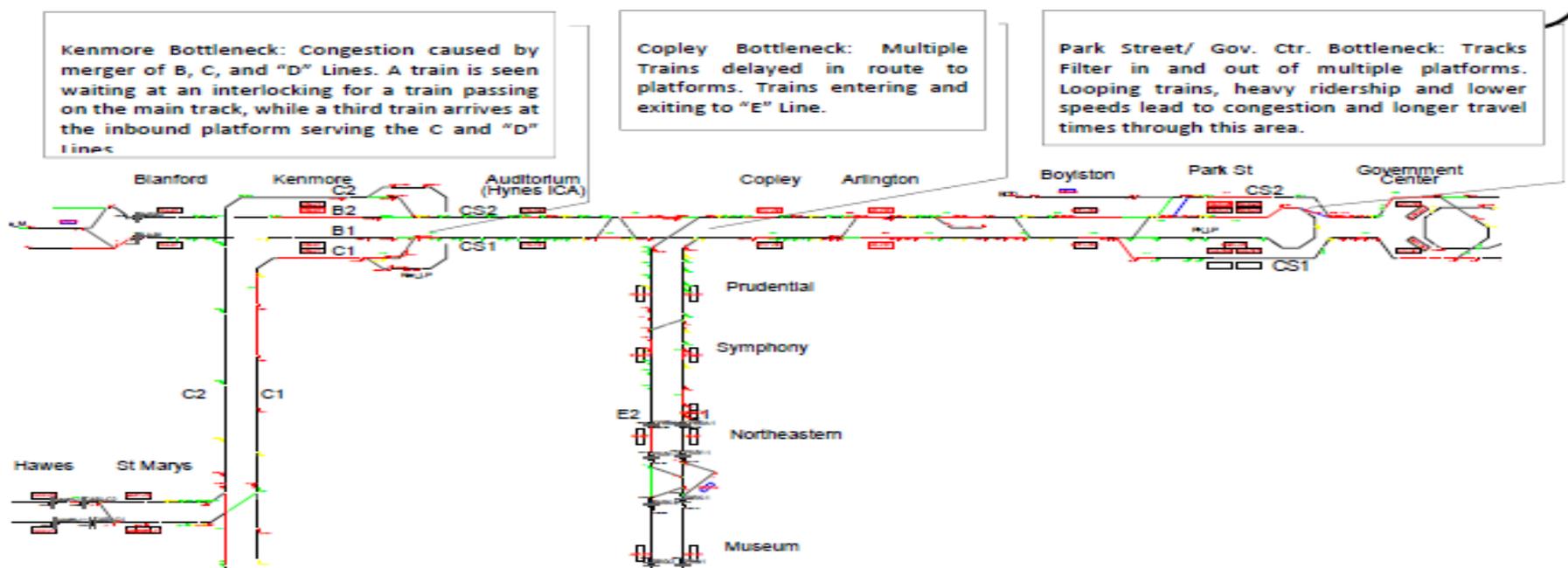
Partnering with City of Boston

- Target: 4 intersections by summer 2016



Limitations to Three Car Trains

- System Bottlenecks: Kenmore, Copley and Park Street
- Multi-Vehicle Communication Reliability
- Park St. and Government Center utilize double berthing of two car sets
- Traction Power Substation and Cable Loads



Moving Forward: Green Line

- Operations team focus on managing performance with newly available data
- Accessibility
 - Major stations complete
 - Surface station spacing and upgrades
- Safety briefing to FMCB
- Integrated fleet plan update – summer 2016
- Infrastructure improvements for safety, reliability and capacity